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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/020,660

12/12/2001

Jeroen Wellen

3

2021

7590

10/18/2005

Docket Administrator (Room 3J-219)  
Lucent Technologies Inc.  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

EXAMINER

FERRIS, DERRICK W

ART UNIT

PAPER NUMBER

2663

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/020,660

Applicant(s)

WELLEN, JEROEN

Examiner

Derrick W. Ferris

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 4-7 and 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8, and 9 is/are rejected.
- 7) ☒ Claim(s) 3 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: missing titles in the specification such as the Background of Invention, Summary of Invention, Brief Description of the Drawings, and Detailed Description.

Appropriate correction is required.

### *Claim Objections*

2. **Claims 4-7 and 11-16** are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 3 for claims 4-7 and multiple dependent claim 10 for claims 11-16. See MPEP § 608.01(n). Accordingly, the **claims 4-7 and 11-16** are not been further treated on the merits.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-2, 8, and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,487,213 B1 to *Chao et al.* ("*Chao*") in view of "On the speedup required for combined input and output queued switching" to *Prabhakar et al.* ("*Prabhakar*").

As such to **claim 1**, *Chao* discloses the step of scheduling the queues associated with at least one of the at least one output port in parallel by scheduling the output queues by means of a scheduling tree as shown e.g., in figure 10 (in view of applicant's figure 3).

As shown in figure 10, the scheduling tree comprises at least one comparison layer (i.e., layers 1-4 shown in the figure) for executing the steps of pair-wise comparison requests (i.e., with respect to the input requests) received from the output queues in parallel and sending the request with a higher priority to a higher level comparison layer until a single request remains, the request indication the output queue scheduled to send its data packet to the associated output port. In particular, see e.g., columns 14-15 where an arbitrator may be used for each output port to fairly select one of the incoming packets. As such, with respect to figure 10, input group request signals are sent to the leaf arbitrators in layer 1 (i.e., for the rejection a group input signal is a request from an input queue). From the leaf arbitrators, a winner is then sent to intermediate arbitrators until the root arbitrator is reached. The root arbitrator then selects one of the input request signals since a single request remains. Since the comparisons are grouped, the comparisons are further performed in parallel.

*Chao* is silent or deficient to the further limitation of using virtual output queues for the main embodiment. In particular, *Chao* teaches that input-output queuing is used but does not explicitly teach virtual output queues, see e.g., column 13, lines 43-53.

*Prabhakar* teaches the further recited limitation above at e.g., the abstract with respect to input-output queuing. *Chao* also teaches the limitation in the Background at e.g., column 10, lines 13-63.

The proposed modification of the above-applied reference(s) necessary to arrive at the claimed subject matter would be to modify the main embodiment of *Chao* by clarifying that the input uses virtual output queues.

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As such, examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include the above limitation. In particular, the motivation for modifying the reference or to combine the reference teachings would to increase throughput and reduce latency. In particular, *Prabhakar* cures the above-cited deficiency by providing the above motivation found at e.g., the abstract. *Chao* also teaches another motivation of preventing head-of-line blocking at e.g., column 10, lines 13-35. Thus the references teach the above claim limitation(s).

As to **claim 2**, since the request represents the input, the request comprises an identification of the associated output queue.

As to **claim 8**, see similar rejection to claim 1. In particular, note that the comparing element 11 is the arbitrator shown e.g., in figure 10 which contains two inputs and one output that is fed into either an intermediate arbitrator or a root arbitrator at a higher level.

As to **claim 9**, see similar rejection to claim 2.

#### ***Allowable Subject Matter***

5. **Claims 3 and 10** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (571) 272-3123. The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

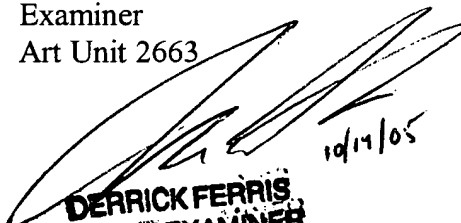
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
DWF

Derrick W. Ferris  
Examiner  
Art Unit 2663

  
10/17/05  
**DERRICK FERRIS**  
**PATENT EXAMINER**